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Late Pleistocene and Holocene Climatic Variability in the Carpathian-Balkan Region

ABSTRACTS VOLUME

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When Holocene soil formation starts on the loess plateaus of the Vojvodina region in Northern Serbia?

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In this study we evaluated simplified direct comparisons between Pleistocene regional and local terrestrial environmental archives and global deep sea and ice core records. Our recent results of the luminescence dating applied to the Serbian loess-paleosol sequences lead to an important question about the validity of previously generalized direct stratigraphic correlations, as well as to underline importance of understanding environmental thresholds which controlling discordances between these paleoclimatic records.

Keywords: enviromagnetism, Late Pleistocene, loess, luminescence dating, Serbia, loess plateau

Rationale

The Northern Serbian province of Vojvodina is a lowland area encompassing the confluence of the Danube, Sava, Tisa (Tisza), Drava, Morava and Tamiš (Temes, Timiş) rivers, which separate several remnant loess plateaus (Marković et al., 2008). Loess sediments in the Vojvodina region are among the oldest and most complete loess-paleosol formations in Europe. These thick sequences contain a detailed paleoclimatic record since the Early Pleistocene (Marković et al., 2009, 2012; Buggle et al. 2009; Basarin et al., 2014).

The better preservation of Serbian loess-paleosol sequences compared to other European loess records is most likely related to the continuous presence of much drier conditions in the region and the persistence of stable "plateau" accumulation (Marković et al., 2009; Buggle et al. 2009).

Results

The luminescence chronology of accumulation derived from several loess sections raises has started to address the timing of the onset of Holocene soil (V-S0) formation in the region. The chronological results demonstrate a lack of intensive pedogenesis during the Early Holocene in some of the investigated sections at the Titel and Tamiš loess plateaux (Marković et al., 2014, Timar-Gabor et al., accepted). Figure 1 shows detailed field description data, lithostratigraphy, magnetic properties and luminescence chronology obtained at Orlovat loess-paleosol sequence (Marković et al., 2014).

This evidence leads to an important question about the validity of previously generalized direct stratigraphic correlations between regional terrestrial environmental archives and global marine and ice core records.

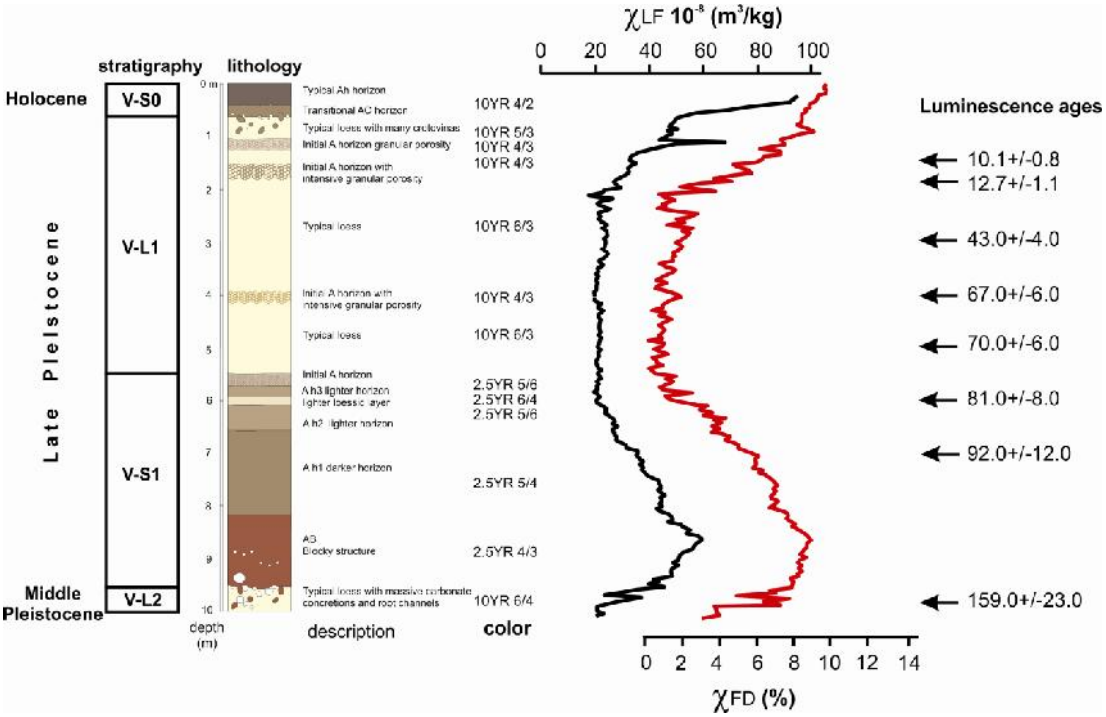

Fig. 1 Sediment colour and description, as well as magnetic properties related to pedostratigraphy of the Orlovat loess-paleosol sequence. Ages shown next to the sequence represent the results of luminescence dating (ka). (Marković et al., 2014, modified).

Perspectives

The presented approach has much space for improvement. Presented evidence leads to an important question about the validity of previously generalized direct stratigraphic correlations between regional terrestrial environmental archives and global marine and ice core records (e.g. Lisiecki and Raymo, 2005).

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